

**UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS**

SINGULAR COMPUTING LLC,

Plaintiff,

v.

GOOGLE LLC,

Defendant.

Civil Action No. 1:19-cv-12551-FDS

Hon. F. Dennis Saylor IV

**PLAINTIFF’S REPLY IN SUPPORT OF
MOTION FOR PARTIAL SUMMARY JUDGMENT OF
NO INVALIDITY UNDER 35 U.S.C. § 101**

Matthew D. Vella (BBO #660171)
Adam R. Doherty (BBO #669499)
Kevin Gannon (BBO #640931)
Brian Seeve (BBO#670455)
Daniel McGonagle (BBO #690084)
PRINCE LOBEL TYE LLP
One International Place, Suite 3700
Boston, MA 02110
Tel: (617) 456-8000
Email: mvella@princelobel.com
Email: adoherty@princelobel.com
Email: kgannon@princelobel.com
Email: bseeve@princelobel.com
Email: dmcgonagle@princelobel.com

Kerry L. Timbers (BBO #552293)
SUNSTEIN LLP
100 High Street
Boston, MA 02110
Tel: (617) 443-9292
Email: ktimbers@sunsteinlaw.com

ATTORNEYS FOR THE PLAINTIFF

Plaintiff, Singular Computing LLC (“Singular”), respectfully submits this reply memorandum in support of its motion for partial summary judgment of no invalidity under 35 U.S.C. 101. For the reasons set forth herein, and in Singular’s opposition to the motion of defendant, Google LLC (Google”), for summary judgment of invalidity under Section 101 (Dkt. No. 498), the asserted claims satisfy step 1 of the *Alice* test. Accordingly, Singular requests that the motion be granted.

Google makes four arguments in its opposition brief:¹ All, however, are rooted in fundamental misstatements of the subject matter to which the asserted claims are directed. As it previously argued in its unsuccessful 101 motion to dismiss on the pleadings, Google asserts that the claims are directed to the abstract idea of a “type of imprecise mathematics.” Google Br., p. 1. But Google ignores the fact that the claims are directed to a “device” that is fundamentally different from prior art computers which were based on high-precision execution units that take up space and are wasteful of transistors. The claimed device, comprising LPHDR execution units that each comprise an “arithmetic circuit paired with a memory circuit,” is not an abstract idea. The asserted claims require a preponderance of LPHDR execution units in combination with a far smaller number of traditional precision execution units.

Singular described in detail the subject matter to which the asserted claims are directed in its earlier briefing in opposition to Google’s 101 motion to dismiss in May 2020. *See* Dkt. No. 44,

¹ Google argues that the asserted claims are invalid under Section 101 “like the mathematical claims” in *Parker v. Flook* and *Gottschalk v. Benson*. Google Br., at 1. Google made a similar argument in support of its motion to dismiss under Section 101. As Singular pointed out in its opposition to that motion, however, Supreme Court law has significantly changed since those cases. *See Diamond v. Diehr*, 450 U.S. 175, 187 (1981) (“It is now commonplace that an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection”). In any event, the asserted device claims in this case are not method or merely “mathematical claims.”

pp. 10-14. And, even earlier than that, Singular described the patent-eligible nature of the claims in its Amended Complaint. For example, Singular asserted as follows:

63. The advance to which claim 7 was directed was a computer having a heterogeneous architecture that can support a wider range of software programs, can execute a far larger number of operations per period than a conventional computer, while supporting software programs that require operations to be performed on numbers having high dynamic range, by:

- a. adding to a computer at least 100 LPHDR units, each LPHDR unit manipulating numbers having a range of at least 1,000,000 to 1/1,000,000, and each LPHDR unit's operations being imprecise by at least 0.05% for at least 5% of its possible inputs;
- b. combining with that number of LPHDR units, a far smaller number of execution units that each execute the operation of multiplication on floating point values that are at least 32 bits wide, that far smaller number being at least 100 fewer than the number of LPHDR units in the computer; and
- c. further incorporating a computing device that is of a central processing unit (CPU), a graphics processing units (GPU), a field programmable fgate array (FPGA), a microcode-based processor, a hardware sequencer, and a state machine, and that controls the operation of the LPHDR units.

Amended Complaint (Dkt. No. 37), pp. 21-22.

Singular reiterated this again just last week in its opposition to Google's motion for summary judgment under Section 101 (Dkt. No. 498). In that briefing, Singular argued, *inter alia*, as follows:

The asserted claims are thus "directed to" a computing device in which LPHDR execution units that meet these specifications predominate over full-precision execution units – by at least 100 units. The evidence shows this design differed radically from what had been the conventional design of computing devices. As the specification describes in detail, a device incorporating this novel computer architecture enables a larger amount of arithmetic computational power with a given amount of resources than does traditional computer architectures.

See Dkt. No. 498, pp. 1-2.

Google’s argument that the claims are not directed to a “concrete embodiment.” (Google Br. at 2) ignores the claim language. The asserted claims contain specific structural limitations every bit as concrete as those that were found to have satisfied *Alice* step 1 in prior cases, such as:

A primary station for use in a communications system comprising at least one secondary station, wherein means are provided

for broadcasting a series of inquiry messages, each in the form of a plurality of predetermined data fields arranged according to a first communications protocol, and

for adding to each inquiry message prior to transmission an additional data field for polling at least one secondary station.

See Uniloc USA, Inc. v. LG Elecs. USA, Inc., 957 F.3d 1303, 1305-06 (Fed. Cir. 2020); *see also* Singular Opp. to Google Mot. for Summ. Judg., (Dkt. No. 498) at pp. 1-2, 5-13.

Google’s argument that claim 7 of the ’156 patent recites nothing more than an abstract idea, notwithstanding its recitation of a computing device adapted to control the operation of LPHDR execution units, is incorrect for much the same reason. Claim 7 requires a specific type of LPHDR computing device that has non-generic, “concrete” limitations, including a preponderance (“exceeds by at least one hundred”) of execution units adapted to execute an operation on an input having a specific dynamic range (1/1,000,000 through 1,000,000), and adapted to output a signal representing values with specific precision ratios (“at least X=5%” and “at least Y=0.05%).

Google’s argument regarding Figure 4 of the asserted patents is without merit. Figure 4 is relevant not because it limits the claims, but because it discloses an example design of the claimed “LPHDR execution unit.” *See, e.g.*, ’273 patent, col. 10, l. 34 – col. 12, l. 37. Similarly, Figure 1 shows the LPHDR execution units replicated in large numbers that, as specified in the asserted claims, exceed in a “concrete” way the number of traditional precision execution units. *See* ’273 patent, Fig. 1.

Google's argument regarding the Court's claim construction of execution unit misapprehends Singular's argument. Singular does not argue that the Court's claim construction alone renders the claims non-abstract. Instead, Singular argues that, as with the claim in *Uniloc v. LG*, the asserted claims are directed to a specific type of non-abstract device having the specific parameters set forth above. *See also* Singular's Opp. (Dkt. No. 498) to Google Mot. for Summ. Judg., at pp. 1-2, 5-13.

Finally, Google's argument regarding the "exceeds" limitation is incorrect. Contrary to Google's representations, Singular argued on pages 3-4 of its brief that the claims have "very specific limitations" including "wherein the number of LPHDR execution units in the device exceeds by at least one hundred the non-negative number of execution units in the device adapted to execute at least the operation of multiplication on floating point numbers that are at least 32 bits wide."

For the reasons set forth above, Singular requests that the Court enter partial summary judgment that the asserted claims of the patents-in-suit are not invalid under 35 U.S.C. § 101.

Dated: May 30, 2023

Respectfully submitted,

/s/ Kevin Gannon

Matthew D. Vella (BBO #660171)

Adam R. Doherty (BBO #669499)

Kevin Gannon (BBO #640931)

Brian Seeve (BBO#670455)

Daniel McGonagle (BBO #690084)

PRINCE LOBEL TYE LLP

One International Place, Suite 3700

Boston, MA 02110

Tel: (617) 456-8000

Email: mvella@princelobel.com

Email: adoherty@princelobel.com

Email: kgannon@princelobel.com

Email: bseeve@princelobel.com

Email: dmcgonagle@princelobel.com

Kerry L. Timbers (BBO #552293)

SUNSTEIN LLP

100 High Street

Boston, MA 02110

Tel: (617) 443-9292

Email: ktimbers@sunsteinlaw.com

ATTORNEYS FOR THE PLAINTIFF

CERTIFICATE OF SERVICE

I certify that all counsel of record who have consented to electronic service are being served with a copy of this document via the Court's CM/ECF system.

/s/ Kevin Gannon